

WHAT IS CLAIMED IS:

1 1. An apparatus for processing a data call in a private evolution data only wireless network
2 system, comprising:

3 relay unit relaying a unicast access terminal identifier request message when the unicast
4 access terminal identifier request message is received from a terminal entering a private evolution
5 data only wireless network, the unicast access terminal identifier request message including a public
6 network unicast access terminal identifier allocated in a public evolution data only wireless network;

7 call processing unit generating a new private evolution data only wireless network unicast
8 access terminal identifier request signal in response to the unicast access terminal identifier request
9 message relayed by the relay unit, and, when a unicast access terminal identifier response message,
10 Unknown unicast access terminal identifier, corresponding to the unicast access terminal identifier
11 request signal is received, closing a session created at the terminal and the public network according
12 to the received message, and said call processing unit relaying a new unicast access terminal
13 identifier request message provided from the terminal through the relay unit, the new unicast access
14 terminal identifier request message including random unicast access terminal identifier information,
15 and sending an authentication request signal to the connection terminal through the relay unit when
16 a private network session is established with the terminal according to a newly allocated unicast
17 access terminal identifier; and

18 session information processing unit for providing a unicast access terminal identifier response
19 message to the call processing unit in response to the private evolution data only wireless network

20 unicast access terminal identifier request signal generated from the call processing unit, allocating
21 the new unicast access terminal identifier to the connection terminal according to the relayed new
22 unicast access terminal identifier request message from the call processing unit to establish the
23 private evolution data only wireless network session with the terminal, and then storing the
24 established session information in a database of the session information processing unit.

1 2. The apparatus according to claim 1, further comprising:

2 an authentication unit connected to the call processing unit, when network access identifier
3 information for authentication is received through the call processing unit from the terminal,
4 authenticating based on the corresponding network access identifier information whether the
5 corresponding connection terminal is a terminal registered in the private evolution data only wireless
6 network, and said authentication unit sending a mobile node identifier value as a return value to the
7 terminal through the call processing unit and the relay unit, and providing the mobile node identifier
8 value of the connection terminal to the session information processing unit to be stored along with
9 the session information in the database of the session information processing unit.

1 3. The apparatus according to claim 1, wherein when a call connection request signal is
2 received from the terminal entering the private evolution data only wireless network in a state where
3 the new private network session has been established with the terminal, the session information
4 processing unit provides the call processing unit with the private evolution data only wireless
5 network session information of the corresponding connection terminal stored in the database.

1 4. The apparatus according to claim 1, wherein when a call connection request signal is
2 received from the terminal entering the private evolution data only wireless network in a state where
3 the new private network session with the terminal has been established, the call processing unit
4 establishes a traffic channel to the corresponding connection terminal according to the private
5 evolution data only wireless network session information of the connection terminal provided from
6 the session information processing unit.

1 5. The apparatus according to claim 1, wherein the call processing unit comprises a routing
2 module, when a call connection request signal is received through the relay unit from the terminal
3 entering the private evolution data only wireless network in a state where the new private network
4 session with the terminal has been established, determining, based on temporary identifier
5 information contained in the call connection request signal, whether a corresponding terminal
6 connection call is a private evolution data only wireless network connection call or a public
7 evolution data only wireless network connection call, and routing the corresponding connection call
8 to the private evolution data only wireless network or the public evolution data only wireless
9 network according to the determining result.

1 6. The apparatus according to claim 1, further comprising:
2 a data packet service node for providing a data service over the Intranet in the private
3 evolution data only wireless network to the corresponding terminal through the call processing unit

4 when a traffic channel to the corresponding terminal is allocated from the call processing unit and
5 call processing is implemented.

1 7. The apparatus according to claim 2, wherein when a call connection request signal is
2 received from the terminal entering the private evolution data only wireless network in a state where
3 the new private network session has been established with the terminal, the session information
4 processing unit provides the call processing unit with the private evolution data only wireless
5 network session information of the corresponding connection terminal stored in the database.

1 8. The apparatus according to claim 2, wherein when a call connection request signal is
2 received from the terminal entering the private evolution data only wireless network in a state where
3 the new private network session with the terminal has been established, the call processing unit
4 establishes a traffic channel to the corresponding connection terminal according to the private
5 evolution data only wireless network session information of the connection terminal provided from
6 the session information processing unit.

1 9. The apparatus according to claim 2, wherein the call processing unit comprises a routing
2 module, when a call connection request signal is received through the relay unit from the terminal
3 entering the private evolution data only wireless network in a state where the new private network
4 session with the terminal has been established, determining, based on temporary identifier
5 information contained in the call connection request signal, whether a corresponding terminal

6 connection call is a private evolution data only wireless network connection call or a public
7 evolution data only wireless network connection call, and routing the corresponding connection call
8 to the private evolution data only wireless network or the public evolution data only wireless
9 network according to the determining result.

1 10. The apparatus according to claim 9, further comprising:

2 a data packet service node for providing a data service over the Intranet in the private
3 evolution data only wireless network to the corresponding terminal through the call processing unit
4 when a traffic channel to the corresponding terminal is allocated from the call processing unit and
5 call processing is implemented.

1 11. The apparatus according to claim 2, further comprising:

2 a data packet service node for providing a data service over the Intranet in the private
3 evolution data only wireless network to the corresponding terminal through the call processing unit
4 when a traffic channel to the corresponding terminal is allocated from the call processing unit and
5 call processing is implemented.

1 12. A method for processing a call in a private evolution data only wireless network system,
2 the private evolution data only wireless network system being interworked with a public evolution
3 data only wireless network system comprising a public data location register, the private evolution
4 data only wireless network system comprising a private base station, a private control station, a

private data location register, a private authentication processor and a data service node, the method comprising:

sending, by the private base station, a unicast access terminal identifier request message that is sent from a terminal entering a private evolution data only wireless network to the private data location register through the private control station, the unicast access terminal identifier request message including unicast access terminal identifier, allocated in the public evolution data only wireless network when the unicast access terminal identifier request message is received;

analyzing whether the unicast access terminal identifier included in the unicast access terminal identifier request message sent through the private control station is unicast access terminal identifier allocated by the data location register, and sending to the private control station a unicast access terminal identifier response message for notifying that it is not the unicast access terminal identifier allocated by the data location register when it is not the unicast access terminal identifier allocated by the data location register, by the data location register;

closing, by the private control station receiving a unicast access terminal identifier response message sent from the private data location register, a session created in the terminal and the public evolution data only wireless network in response to the received unicast access terminal identifier response message;

allocating a new unicast access terminal identifier, establishing a private evolution data only wireless network session with the terminal, and storing the session in a database of the private data location register, by the private data location register, when the unicast access terminal identifier request message including random unicast access terminal identifier information from the terminal

is sent through the private base station and the private control station to the private data location register after the session has been closed; and

performing, by the private authentication processor, private authentication of the terminal using a mobile node identifier value sent from the terminal when the new private network session is established, and then storing the mobile node identifier value of the corresponding terminal along with session information in the database of the private data location register.

13. The method according to claim 12, further comprising:

when there is a call connection request from the terminal entering the private evolution data only wireless network in a state where the private network session with the terminal has been established, sending a call connection request signal from the terminal to the private control station, by the private base station;

determining, by the private control station, whether the call connection request signal sent from the private base station is a private evolution data only wireless network connection request signal or a public evolution data only wireless network connection request signal;

requesting, by the private control station, session information to the private data location register when the connection request signal from the corresponding terminal is the private evolution data only wireless network connection request signal;

retrieving, by the private data location register, session information of the corresponding terminal stored in the database of the private data location register to send the session information to the private control station; and

15 allocating a traffic channel to the terminal using the session information sent from the private
16 data location register, and performing data service over the allocated traffic channel, by the private
17 control station.

1 14. The method according to claim 13, further comprising the steps of:

2 when it is determined in the step of determining, by the private control station, whether the
3 call connection request signal sent from the private base station is a private evolution data only
4 wireless network connection request signal or a public evolution data only wireless network
5 connection request signal, that the call connection request signal sent from the private base station
6 is the public evolution data only wireless network connection request signal, sending, by the private
7 control station, the session information request signal of the corresponding terminal according to the
8 call connection request signal, to the data location register in the public evolution data only wireless
9 network;

10 determining, by the public data location register, whether the session information of the
11 corresponding terminal is the session information allocated in the public evolution data only wireless
12 network in response to the session information request which sent through the private control station
13 in the private evolution data only wireless network;

14 when the session information of the terminal is not the session information allocated in the
15 public evolution data only wireless network, providing the private control station with a response
16 message, Unknown unicast access terminal identifier, notifying that the session information of the
17 corresponding terminal is not the session information allocated by the public evolution data only

18 wireless network; and

19 closing, by the private control station, the private network session with the terminal to block
20 a connection to the public network in response to a response message provided from the data
21 location register in the public evolution data only wireless network.

1 15. The method according to claim 12, further comprising:

2 when there is a call connection request from the terminal entering the private evolution data
3 only wireless network in a state where the private network session with the terminal has been
4 established, sending a call connection request signal from the terminal to the private control station,
5 by the private base station; and

6 determining, by the private control station, whether the call connection request signal sent
7 from the private base station is a private evolution data only wireless network connection request
8 signal or a public evolution data only wireless network connection request signal.

1 16. The method according to claim 15, further comprising the steps of:

2 when it is determined in the step of determining, by the private control station, whether the
3 call connection request signal sent from the private base station is a private evolution data only
4 wireless network connection request signal or a public evolution data only wireless network
5 connection request signal, that the call connection request signal sent from the private base station
6 is the public evolution data only wireless network connection request signal, sending, by the private
7 control station, the session information request signal of the corresponding terminal according to the

8 call connection request signal, to the data location register in the public evolution data only wireless
9 network.

1 17. The method according to claim 16, further comprising the steps of:

2 determining, by the public data location register, whether the session information of the
3 corresponding terminal is the session information allocated in the public evolution data only wireless
4 network in response to the session information request which sent through the private control station
5 in the private evolution data only wireless network;

6 when the session information of the terminal is not the session information allocated in the
7 public evolution data only wireless network, providing the private control station with a response
8 message, Unknown unicast access terminal identifier, notifying that the session information of the
9 corresponding terminal is not the session information allocated by the public evolution data only
10 wireless network; and

11 closing, by the private control station, the private network session with the terminal to block
12 a connection to the public network in response to a response message provided from the data
13 location register in the public evolution data only wireless network.

1 18. A method for processing a call in a private evolution data only wireless network system,
2 the method comprising the steps of:

3 receiving a unicast access terminal identifier request message from a terminal entering a
4 private evolution data only wireless network, the unicast access terminal identifier request message

5 including a unicast access terminal identifier, old unicast access terminal identifier, allocated in a
6 public evolution data only wireless network;

7 determining whether the old unicast access terminal identifier included in the received
8 unicast access terminal identifier request message is unicast access terminal identifier allocated in
9 the private evolution data only wireless network;

10 when it is determined that the unicast access terminal identifier included in the sent unicast
11 access terminal identifier request message is not the unicast access terminal identifier allocated in
12 the private evolution data only wireless network, closing a public evolution data only wireless
13 network session established with the terminal;

14 when a unicast access terminal identifier request message including random unicast access
15 terminal identifier information is received from the terminal after the session has been closed,
16 allocating a new unicast access terminal identifier according to the received random unicast access
17 terminal identifier information, establishing a private evolution data only wireless network session
18 with the terminal, and storing the session in a database; and

19 when the new private evolution data only wireless network session is established, sending
20 an authentication request signal to the terminal, and when a mobile node identifier value of the
21 terminal needed for authentication is received from the terminal, performing private authentication
22 for the corresponding terminal using the received mobile node identifier of the terminal, and then
23 storing the mobile node identifier value of the corresponding terminal along with the session
24 information in the database.

1 19. The method according to claim 18, further comprising the steps of:

2 when there is a call connection request from the terminal entering the private evolution data
3 only wireless network in a state where a private session has been established with the terminal,
4 determining whether a corresponding call connection request signal is a private evolution data only
5 wireless network connection request signal or a public evolution data only wireless network
6 connection request signal;

7 retrieving session information of the corresponding terminal stored in the database when it
8 is determined that the connection request signal from the corresponding terminal is the private
9 evolution data only wireless network connection request signal; and

10 allocating a traffic channel to the terminal according to the retrieved session information of
11 the corresponding terminal and performing data service through the allocated traffic channel.

1 20. The method according to claim 18, further comprising:

2 when there is a call connection request from the terminal entering the private evolution data
3 only wireless network in a state where a private session has been established with the terminal,
4 determining whether a corresponding call connection request signal is a private evolution data only
5 wireless network connection request signal or a public evolution data only wireless network
6 connection request signal.

1 21. The method according to claim 19, further comprising the steps of:

2 when the call connection request signal from the terminal is the public evolution data only

3 wireless network connection request signal, requesting the public evolution data only wireless
4 network to provide a session information request signal of a corresponding terminal according to the
5 call connection request signal; and

6 when receiving, from the public evolution data only wireless network, a response message
7 indicating that the session information of the corresponding terminal is not the session information
8 allocated in the public evolution data only wireless network in response to the request, closing the
9 private network session with the terminal to block the connection to the public network in response
10 to the response message provided from the public evolution data only wireless network.

1 22. The method according to claim 19, further comprising:

2 when the call connection request signal from the terminal is the public evolution data only
3 wireless network connection request signal, requesting the public evolution data only wireless
4 network to provide a session information request signal of a corresponding terminal according to the
5 call connection request signal.

1 23. A computer-readable medium having computer-executable instructions for performing
2 a method, comprising:

3 sending, by a private base station, a unicast access terminal identifier request message that
4 is sent from a terminal entering a private evolution data only wireless network to a private data
5 location register through a private control station, the unicast access terminal identifier request
6 message including unicast access terminal identifier allocated in the public evolution data only

wireless network when the unicast access terminal identifier request message is received;

analyzing whether the unicast access terminal identifier included in the unicast access terminal identifier request message sent through the private control station is unicast access terminal identifier allocated by the data location register, and sending to the private control station a unicast access terminal identifier response message for notifying that it is not the unicast access terminal identifier allocated by the data location register when it is not the unicast access terminal identifier allocated by the data location register, by the data location register;

closing, by the private control station receiving a unicast access terminal identifier response message sent from the private data location register, a session created in the terminal and the public evolution data only wireless network in response to the received unicast access terminal identifier response message; and

allocating a new unicast access terminal identifier, establishing a private evolution data only wireless network session with the terminal, and storing the session in a database of the private data location register, by the private data location register, when the unicast access terminal identifier request message including random unicast access terminal identifier information from the terminal is sent through the private base station and the private control station to the private data location register after the session has been closed.

24. A computer-readable medium having stored thereon a data structure comprising:

a first field containing data representing receiving a unicast access terminal identifier request message from a terminal entering a private evolution data only wireless network, the unicast access

terminal identifier request message including a unicast access terminal identifier, old unicast access terminal identifier, allocated in a public evolution data only wireless network;

a second field containing data representing determining whether the old unicast access terminal identifier included in the received unicast access terminal identifier request message is unicast access terminal identifier allocated in the private evolution data only wireless network;

a third field containing data representing when it is determined that the unicast access terminal identifier included in the sent unicast access terminal identifier request message is not the unicast access terminal identifier allocated in the private evolution data only wireless network, closing a public evolution data only wireless network session established with the terminal;

a fourth field containing data representing when a unicast access terminal identifier request message including random unicast access terminal identifier information is received from the terminal after the session has been closed, allocating a new unicast access terminal identifier according to the received random unicast access terminal identifier information, establishing a private evolution data only wireless network session with the terminal, and storing the session in a database; and

a fifth field containing data representing when the new private evolution data only wireless network session is established, sending an authentication request signal to the terminal.

25. An apparatus for processing a data call in a private wireless network system, comprising:

a first unit transferring a request message when the request message is received from a terminal entering a private wireless network, the request message including a public network unicast

4 access terminal identifier allocated in a public wireless network;

5 a second unit generating a new private wireless network request signal in response to the
6 request message transferred by the first unit, and, when a response message, unknown unicast access
7 terminal identifier, corresponding to the request signal is received, closing a session created at the
8 terminal and the public network according to the received message, and said second unit transferring
9 a new request message provided from the terminal through the first unit, the new request message
10 including random unicast access terminal identifier information, and sending an authentication
11 request signal to the connection terminal through the first unit when a private network session is
12 established with the terminal according to a newly allocated unicast access terminal identifier; and

13 a third unit providing a response message to the call processing unit in response to the private
14 wireless network request signal generated from the second unit, allocating the new unicast access
15 terminal identifier to the connection terminal according to the transferred new unicast access
16 terminal identifier request message from the call processing unit to establish the private wireless
17 network session with the terminal, and then storing the established session information in a database
18 in a memory of the third unit.